



## Speakers at the LIACS Business Event 2015, November 17.

### Big Business – Big Business?

#### Prof. Dr. Joost N. Kok (LIACS), Scientific director of LIACS



The research of prof Kok is concentrated around the themes (scientific) data and model management, data mining, bioinformatics and algorithms. Since 1995 he has been a professor in computer science, and since 2005 also a professor in medicine at Leiden University. He is the **Scientific Director** of the Leiden Institute of Advanced Computer Science (LIACS), and **leads the research clusters Algorithms and Foundations of Software Technology**. Fifty PhD students completed their theses under Kok's supervision. He serves as a **chair, member of the management team, member of the board, or member of the scientific committee** of the Dutch Theoretical Computer Science Association, the Centre for Mathematics and Computer Science (CWI) Amsterdam, the Research Foundation Flanders (Belgium), the European Educational Forum, and the International Federation for Information Processing (IFIP), Technical Committee 12 (Artificial Intelligence), and the Program Board Computational Science Lorentz Center. He has been the chair of the review panels "Computational Science" and "Strategic Centers for Science, Technology and Innovation Finland" of the Academy of Finland.

He is an **editor of the book series** Natural Computing (Springer), Editor in Chief of the journal Natural Computing (Springer), an editor of the journal Theoretical Computer Science, an editor of Fundamenta Informaticae, an editor of the Journal of Universal Computer Science, an associate editor of the journal Computational Intelligence (Wiley), and a series editor of the book series Frontiers in Artificial Intelligence and Applications (IOS Press).

Prof. Kok is **on the steering, scientific or advisory committees** of the following events: the Mining and Learning with Graphs Conference, the Intelligent Data Analysis Conference, the Institute for Programming and Algorithms Research School, the Biotechnological Sciences Delft–Leiden Research School, and the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases. He has been a **program committee member for more than 150 international conferences, workshops or summer schools**.

Prof. Kok's publications have a total of **more than 4298 citations** (Google scholar<sup>1</sup>), with an **H-index of 33** and an **i10-index of 84** (all data as of September 2014.)

<sup>1</sup> <http://scholar.google.nl/citations?user=Aj6MRjwAAAAJ&hl=nl>

## Prof. Dr. Thomas H.W. Bäck (LIACS), Director of LIACS

### Research Areas:

- . *Evolutionary computation, nonlinear global optimization*
- . *Data mining for response surface modelling*
- . *Multiple criteria decision making*
- . *Natural computing*



Prof. Dr. Thomas Bäck is full professor and head of the Natural Computing Group at LIACS since 2002. Previously, he was UHD at LIACS from 1996 – 2002, and CEO and Chief Scientist of NuTech Solutions GmbH and Inc., Dortmund (Germany) and Charlotte, NC. He received his PhD with greatest distinction in 1994 from University of Dortmund, Germany.

Prof. Bäck has more than 200 publications on natural computing algorithms, is the author of a book on evolutionary algorithms, entitled *Evolutionary Algorithms in Theory and Practice* (OUP, 1996), co-author of the book “*Contemporary Evolution Strategies*” (Springer, 2013), co-editor of the *Handbook of Evolutionary Computation* (OUP, 2002), and co-editor of the *Handbook of Natural Computing* (Springer, 2012). He is editorial board member and associate editor of a number of journals on

evolutionary and natural computation (*Journal of Natural Computing*, *Theoretical Computer Science C*, *Evolutionary Computation*), co-editor of the *Natural Computation Book Series*, and has served as program chair for all major conferences in evolutionary computation.

He received the **best dissertation award** from the Gesellschaft für Informatik (GI) in 1995 and is an **elected fellow of the International Society for Genetic and Evolutionary Computation** for his contributions to the field. Most recently, he also was announced to win the **2015 IEEE CIS Evolutionary Computation Pioneer Award** for his contributions in synthesizing evolutionary computation.

Prof. Bäck has ample experience in matching the requirements of industrial optimization and decision making tasks with problem-solving algorithms such as evolutionary computation, decision making, and data driven modelling algorithms. He leads and has led projects with companies such as Air Liquide, BMW, Daimler, Ford, Honda, PepsiCo, and many others, and has successfully solved some of the most complex industrial problems.

Prof. Bäck was the **first researcher who developed a unified version of evolutionary algorithms** by abstracting from the specific principles of algorithms such as genetic algorithms and evolutionary strategies. He was **the first to present a new model for the theoretical analysis of genetic algorithms**, and used it to develop self-adaptive strategy parameter control techniques for genetic algorithms. He has also very successfully focused on solving challenging industrial problems by evolutionary computation.

Prof. Bäck’s publications have a total of **more than 18041 citations** (Google scholar<sup>2</sup>), with an **H-index of 43** and an **i10-index of 95** (all data as of September 2014.) His monograph “*Evolutionary Algorithms in Theory and Practice*” has more than 4.000 citations.

<http://natcomp.liacs.nl/>

<sup>2</sup> <http://scholar.google.de/citations?user=x7LEID0AAAAJ&hl=en&oi=ao>

## Prof. Dr. Bernhard Sendhoff, Honda Research Institute Europe GmbH



Bernhard Sendhoff obtained a PhD in Applied Physics in May 1998, from the Ruhr-Universität Bochum, Germany. From 1999 to 2002 he worked for Honda R&D Europe (Deutschland) GmbH last in the position of Deputy Division Manager and Chief Scientist.

**In 2003, he joined the Honda Research Institute Europe GmbH** as Chief Technology Officer. Since 2007 he is **Honorary Professor** of the School of Computer Science of the **University of Birmingham**, Great Britain and since 2008, he is Honorary Professor at the Technical **University of Darmstadt**, Germany.

Since 2011 he is **President of the Honda Research Institute Europe GmbH**. Bernhard Sendhoff is a **senior member of the IEEE and the ACM** and has authored or co-authored more than 150 scientific publications.

<http://www.honda-ri.de/>

## Prof Dr. Jaap van den Herik, Director of LCDS

Jaap van den Herik (1947) is Professor of Law and Computer Science at the Leiden University, at the Faculty of Science (since 2014) and the Faculty of Law (since 1988). He is also director of the recently launched Leiden Centre of Data Science (LCDS). Previously, he was affiliated with the Tilburg University (2008-2016) and the Maastricht University (1987-2008) as full Professor Computer Science.

He is the founding Director of IKAT (Institute of Knowledge and Agent Technology) and TiCC (Tilburg center for Cognition and Communication) and was supervisor of 71 Ph.D. researchers. Van den Herik studied mathematics (with honors) at the Vrije Universiteit Amsterdam and received his Ph.D. degree at Delft University of Technology in 1983.



He was active in many organizations, such as the Belgian Netherlands Association of AI, JURIX, the ICGA, ToKeN, Catch and the consortium BIGGRID. He is ECCAI fellow since 2003. Van den Herik is member of the TWINS (the research council for sciences of the KNAW) and a member of the Royal Holland Society of Sciences and Humanities.

In 2012 he was co-recipient of an ERC advanced Researcher Grant (together with J. Vermaseren and A. Plaat).

<http://lcds.science.leidenuniv.nl/lcds>

## Dr. Florian Neukart, CTO of Datalab Volkswagen AG

### Active in:

- . *Data Science, Business Intelligence*
- . *Artificial intelligence – machine learning, natural language processing, robot vision*
- . *Robotics – Internet of Things, smart environments*



Dr. Florian Neukart works as Chief Technology Officer and Data Scientist in the Volkswagen Data Lab. He joined the Volkswagen group in 2010 as a technical consultant, focusing on the development of analytic software. Soon he took over technical responsibility for the group's largest Business Intelligence platform with ~25,000 active users back at that time.

In Florian's current role, his responsibilities incorporate evaluating and integrating innovative technologies and start-ups related to data storage, data analytics, data visualization and IoT. He is heading a team of technical experts and data scientists developing analytic solutions in any sort related to data, be it targeting, segmentation, market prediction,..., social media analysis, natural language processing, image processing, robotics, sensory environments..., and a lot more. In that sense, he and his team are responsible for the operation and security of two data centres which's a full capacities are leveraged to develop, run and research on analytic solutions.

Furthermore, he is responsible for establishing research partnerships related to the VW Data Lab's areas of activity.

Finally, he works at the LIACS as a lecturer in the field of Business Intelligence.

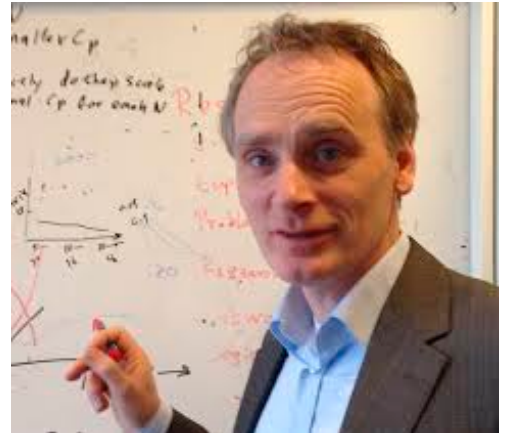
Florian Neukart received his PhD from the University of Brasov in 2013 summa cum laude. Amongst others, in his research he was focusing on how to leverage effects occurring in quantum physical systems in artificial intelligence.

[http://www.volkswagenag.com/content/vwcorp/info\\_center/en/news/2014/11/data.html](http://www.volkswagenag.com/content/vwcorp/info_center/en/news/2014/11/data.html)

## Prof. Dr. Aske Plaat (LCDS/ LIACS), Professor of Data science

**Research Areas:** *Large-scale data analysis, predictive analytics, search algorithms, computational intelligence, simulations and behavioural modelling and behavioural decision-making.*

Prof. dr. Aske Plaat studied at the University of Alberta, Edmonton and the Erasmus University, Rotterdam where he obtained his PhD in 1996 for which he received the ICCA Novag Award. In 2009 he started working as professor Information and Complex Decision Making at Tilburg University, where he has set up complexity research at the Tilburg Center for Cognition and Communication. Since 2014 Prof. Plaat joined LIACS at Leiden University as professor of Data Science. He is a founding member of the Leiden Centre of Data Science and eScience Integrator at the Netherlands eScience Center.



Prof Plaat is currently involved in projects on solving large equations for High Energy Physics, player modeling in video games, measuring audience preferences in large-scale databases, predictive modeling of structural integrity in infrastructure and automobile and aviation.

Prof. Plaat's publications have a total of **1467 citations** (Google scholar<sup>3</sup>), with an **H-index of 19** and an **i10-index of 26** (all data as of September 2015.)

The Leiden Centre of Data Science (LCDS) is a network of researchers from different scientific domains within Leiden University and the Leiden University Medical Center with an interest and expertise in data science. LCDS focuses on the development of statistical and computational methods for scientific data within the *Fundamentals of science* and *Life, health and bioscience* LCDS aims to a.o. generate knowledge and technology to solve data problems associated with the grand challenges of 21st century societies and to promote data science and raise data science awareness.

Further reading on: <http://plaat.nl/>

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<sup>3</sup> <https://scholar.google.de/citations?user=scYqr58AAAAJ&hl=en>



## Dr. Matthijs van Leeuwen, Senior researcher at LIACS



### Patterns that Matter – Describing Structure in Data

Matthijs is a senior researcher at the Leiden Institute of Advanced Computer Science (LIACS), Leiden University. He defended his Ph.D. thesis titled '*Patterns that Matter*' in February 2010, which he wrote under supervision of prof.dr. Arno Siebes in the Algorithmic Data Analysis group at Universiteit Utrecht. After obtaining his Ph.D., Matthijs was a postdoctoral researcher at Universiteit Utrecht for two years (2009-2011), and in the Machine Learning group at KU Leuven for four years (2011-2015). He has won several best (student) paper awards at prestigious conferences, and has been awarded two personal grants by NWO and FWO, the Dutch and Flemish research foundations.

### Abstract

Following the immense successes of data-driven companies such as Amazon and Netflix, the term Big Data is commonly associated with predictive analytics. That is, given data from the past, the goal is to predict the future. E.g., which product/movie would the customer like to buy/watch next? In many circumstances, however, we need a *description* of the data and prediction simply doesn't fit the bill.

In this presentation I will talk about my research in the exciting area of *exploratory data mining*. It strives to enable domain experts to explore their data and gain novel insights. In particular, my expertise is in pattern mining, an approach to discover and describe structure in data. In short, my goal is to develop theory and algorithms needed to find patterns that matter [1].

After a brief introduction to pattern mining, I'll talk about my work on using information theory for pattern mining [2], which can be loosely paraphrased by the slogan 'compression for data mining'. After explaining the foundations, I'll present a few applications to illustrate the advantages and opportunities of pattern-based modelling.

In the interest of time I'll take a bird's-eye view and skip the technical details, but I hope to attract your interest in exploratory data mining and entice you to start looking for patterns that matter.

[1] [www.patternsthatmatter.org](http://www.patternsthatmatter.org)

[2] van Leeuwen, M. & Vreeken, J. *Mining and Using Sets of Patterns through Compression*. In: Frequent Pattern Mining (Aggarwal, C.C., & Han, J., eds), Springer, 2014.

[3] van Leeuwen, M. *Interactive Data Exploration using Pattern Mining*. In: Interactive Knowledge Discovery and Data Mining: State-of-the-Art and Future Challenges in Biomedical Informatics (Holzinger, A. & Jurisica, I., eds), LNCS, Springer, 2014.

## Frans Vriesendorp, CEO of INDG



Frans launched INDG in 1999 while studying technology management at the University of Groningen (Netherlands). Over the years, he has shifted the focus of INDG from digital design to computer-generated imaging and interactive product experiences.

The breakthrough came in 2003 when INDG collaborated with architects re-designing Amsterdam's Rijksmuseum to create a full 3D visualization of the new interiors. In 2015, the INDG team won a Webby for the consumer interior design app Amikasa. Today, Frans leads a team of 90+ designers, marketers and technicians in Amsterdam, Bucharest and New York.

## Daniel Haveman, CTO at INDG

As a kid Daniel Haveman came into contact with programming via his grandfather, who was the owner of the first electronics store in his hometown. In 2001 he joined [INDG](#) as a developer and, now as CTO, has become one of the key contributors to INDG's products.

Helping to define the architecture of our frameworks, he is involved with guiding the teams on projects, including [Yamaha's My Garage](#), the Philips interactive Product Experiences and the Ralph Lauren Room Builder.

Daniël is a strong believer in creating technology that enables great user experiences.

INDG currently has offices in Amsterdam, New York, and Bucharest and serves clients like Philips, Marks & Spencer, Adidas, Electrolux, and Yamaha.

Further reading on <http://indg.com/>



## Rokesh Jankie, CTO at Qualogy Solutions

Rokesh Jankie graduated in 1998 with a master's degree in computer science at Leiden University, The Netherlands. He specialized in algorithms and NP-complete problems. Also he has spent a lot of time during the study on natural computation (Neural Networks, Genetic Algorithms).

He started working for the University of Leiden, ORTEC consultants, and Ponte Vecchio, and later worked for Qualogy. At Qualogy, he used what he had experienced till that point to set up a product. Qualogy works in the field of Oracle and Java technology. With the current set of technologies, interesting products can be delivered and that is QAFE. Now as CTO of Qualogy Solutions he's exploring new technologies and to see how it will fit current and future use cases and takes the lead for the Data Science practise within Qualogy.



Rokesh is a huge fan of Google, this led to being the GDG Netherlands Organizer for the last 6 years now and still doing this with a lot of enthusiasm. Besides this hobby he likes photography and once a week he is certified Les Mills group fitness instructor for Bodypump at a gym. Last but not least: his wife and son are his passion!

See [www.qafe.com](http://www.qafe.com) for more information.



## **Jeroen van der Leijé, a.o. LIACS Business Liaison**



Jeroen holds a master degree in Sociological Economics from Erasmus University Rotterdam (NL) with a specialisation in organisational culture and change management. In his first job at a consulting firm, he developed simulation models for optimising organisation processes.

In 1999 he joined Shell, respectively as an organisation development consultant, change manager for the new Exploration & Production head office in Rijswijk (NL) and finally as senior business economist to model investments in the E&P domain. In 2007 he became CEO of a startup with Wageningen University (NL) on highly advanced biochemical analysis.

Starting in 2010 Jeroen worked for the Technology Transfer Office at Leiden University, in setting up academic consultancy services. Since 2013 he is self employed at YOOROON, via which he works as project manager, business development manager and organisation development consultant.

In his role as Business Liaison at LIACS he is responsible for the development of relations with partners and supports the writing of research proposals.

See more on: [www.yooroon.com](http://www.yooroon.com)